A COLLAPSIBLE INSECT EMERGENCE TRAP FOR USE IN SHALLOW STANDING WATER[1]

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ABSTRACT: A trap to collect emerging aquatic insects in shallow (< 15 cm) standing water is described. Trap construction is nitex netting over an aluminum framework. The trap encloses a defined substrate surface area of 0.1 m^2 and captures all aquatic insects emerging within that area. When retrieved the trap can be collapsed to retain all insects.

Study of the aquatic insect community in a shallow (<15 cm) pond requires collection of emerging adults for precise species identification and determination of emergence periods of individual species. For this purpose I designed an emergence trap of nitex netting stretched over an aluminum framework (Fig. 1). Trap design is that of a collapsible triangular prism, unlike conical and essentially rigid emergence traps described by Corbet (1965), McCauley (1976), and Lammers (1977). Trap collapsibility allows easy catch retrieval with forceps after sacrifice and facilitates economy of storage and ease of transportation.

CONSTRUCTION

The trap framework consists of two rectangular sections (each 47.3 x 31.5 cm) constructed of angle aluminum (1.5 x 12.7 x 12.7 mm) hinged together along one edge (Fig. 2). One piece of appropriate mesh netting is stretched tautly over both sections, including the hinged joint, and fastened securely with flat aluminum strips and bolts. The triangular sides of the trap (47.3 x 47.3 x 31.5 cm) are netting reinforced along the bottom (short) edge with rubber tape (Fig. 2A) and fastened to the framework as described above. The side netting is attached so that it stretches tautly when the trap is opened to sample area 0.1 m^2. Two aluminum strips 32.0 cm long (Fig. 2B) are bolted at one end to one framework section. The trap is spread open and appropriate holes are drilled in the opposite ends to fit over 5 x 40 mm bolts (Fig. 2C) attached to the other section. Bolts (Fig. 2D) are used to secure the strips when the trap is closed.

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OPERATION

The open trap is set directly on the substrate. Upon retrieval the base is lifted clear of the substrate, but kept submerged to prevent escape of the catch. The movable strips are disengaged and immobilized with bolts (Fig. 2D). The triangular netting is folded into the trap as it is closed. When the trap is closed, the edges of the two aluminum base pieces fit together to contain the catch. The trap is then removed from the water. The catch can be sacrificed with alcohol in the trap, or it can be transported live to the laboratory.

OBSERVATIONS

Although the trap rests directly on the substrate surface, substrate disruption can be minimized by careful trap placement. Movement of water and

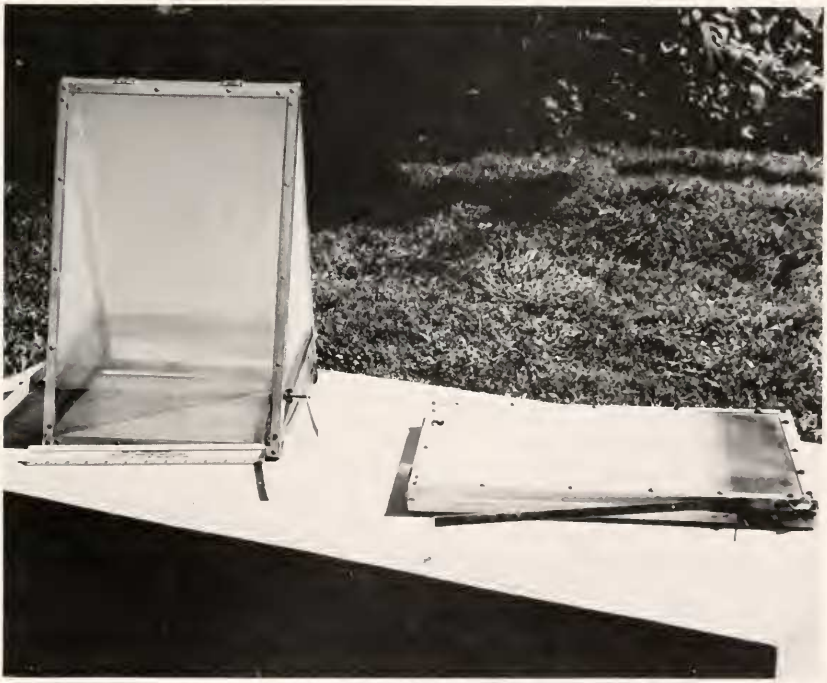

Fig. 1. Emergence traps designed to collect aquatic insects in shallow standing water, in open and closed positions.

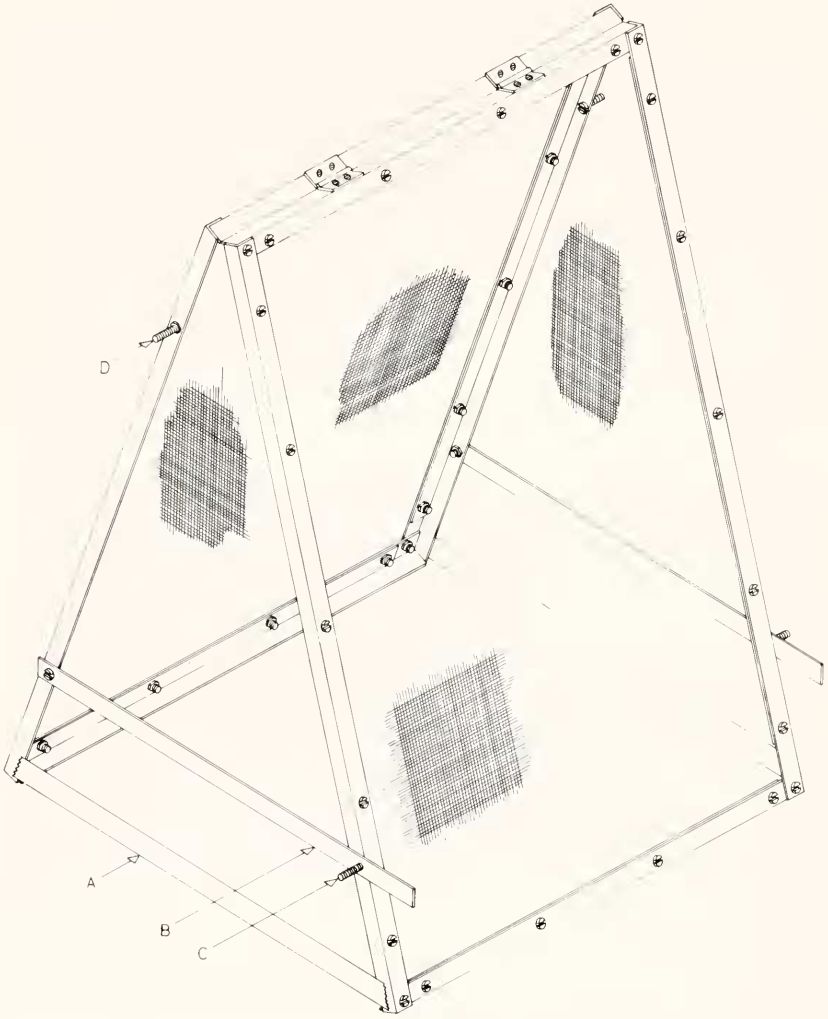

Fig. 2. Isometric projection diagram of the emergence trap showing construction details. A, rubber tape reinforcing folding side of net; B, aluminum strip used to keep trap open; C, bolt used to secure aluminum strip with trap open; D, bolt used to immobilize aluminum strip with trap closed.

diffusion of dissolved substances into and out of the trap should be facilitated, not impeded, by the netting.

The submerged netting was observed to discolor after several weeks of trap use, presumably from organic materials or algae in the water. However, I periodically cleansed the netting with detergent which minimized discoloration, but did not eliminate it.

No catch retention "baffle" such as those included by Mundie (1971) and McCauley (1976) in their designs is a part of my trap. It is assumed that natural mortality is insignificant over a trapping period of two days. The netting provides ample "foothold" for emerging insects since large numbers of exuviae, potentially useful for association with adults, are recovered from it.

One trap collected 1464 specimens of 30 species of Diptera, Ephemeroptera, and Odonata during 375 days of operation May-October 1975 and March-October 1976. It was blown over by wind only once during the period.

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